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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/783,765	GROCHOWSKI, EDWARD T.	
	Examiner	Art Unit	
	Robert E. Fennema	2183	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 May 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-34 have been considered. Claims 1-2, 10-11, 17-19, 27-28, and 34 have been amended as per Applicant's request.

2. Examiner notes that two different grounds of rejections for each Claim are present in this action, in response to two different interpretations of the claims and the references, which will be explained in further detail below.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1,10, 18, and 27 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The claims indicate that when the confidence value is low, that micro-ops can be issued which "implement the predicate" of the instruction, without stalling the instruction. However, as one of ordinary skill in the art would recognize, a predicated instruction cannot proceed without its predicate value being used, therefore, there is no way that one of ordinary skill in the art would be capable of making or using an invention

which allows an instruction to proceed without a vital operand being known or predicted, indicating if it should execute or not.

5. Claims 1,10, 18, and 27 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claims indicate that when the confidence value is low, that the machine can issue micro-operations to "implement the predicate" of the instruction, without stalling the instruction. The word "stall" does not appear in the specification, and while in paragraph 22, the Applicant discusses that the instruction may be decomposed into other instructions, this does not necessarily mean that the instruction was not stalled, in fact, it could be interpreted that the instruction is stalled permanently, as it will never advance in the pipeline in its current form.

6. Examiner suggests altering the language in the claims to make more explicit that the instruction is being replaced/modified by other instructions, and removing the "without stalling" language, as not only does it not appear to be supported by the specification, but as stated above, even this operation could be considered to be a stall, and making this more clear would help to overcome both the written description and enablement rejections, as the current language is unclear and unsupported at best, and impossible to implement at worst. Applicant is encouraged to contact Examiner to work

out appropriate language for the claim, if the Applicant wishes to modify the language and is not sure how to proceed to overcome the rejections.

7. Given the 112 rejections above, Examiner cannot properly examine the claims as claimed, as the current language in the claim cannot be done, and thus cannot be found in prior art. However, in the interests of prosecuting the case, Examiner will make some assumptions about the claim language in order to provide an art rejection (which will be explained in the rejections), such that should the 112 rejections be overcome, the Applicant can have the benefit of an art rejection to help move the case towards allowance.

Specification

8. The amendment filed 5/7/2007 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: Micro-operations being issued to implement the predicate of the instruction, without the instruction being stalled. The word "stall" does not appear in the Applicant's specification, and thus appears to be new matter, as explained above in the 112 rejections.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1-17, and 27-34 are rejected under 35 U.S.C. 102(b) as being anticipated by Grochowski et al. (United States Patent Application Publication 2001/0023208, herein Grochowski).

11. As per Claim 1, Grochowski teaches: A processor, comprising:

a predicate predictor to determine a predicted predicate value and a confidence value for the predicted predicate value for a first instruction with a predicate (Paragraph 20); and

a micro-op generator to conditionally issue one or more micro-ops from a first or second set of unconditional micro-ops based on the predicted predicate value of said first instruction when said confidence value is high (Paragraph 21, if the confidence value is high, it executes a series of microinstructions), wherein the first and second set of unconditional micro-ops correspond to conditional branches of said first instruction (See Figure 1, "if" instructions are conditional branches), and a sequence of micro-ops that implement the predicate of the first instruction without stalling the instruction when said confidence value is low (Paragraph 21. As stated in the 112 rejections, since an instruction cannot proceed without knowing its predicate, this would appear to not be

possible. However, Examiner notes that both the claim and Grochowski's stalling are functionally equivalent to each other, as in both cases, the instruction cannot proceed without the predicate being resolved, with Grochowski requiring instructions to complete to get the predicate before it can continue, which appears to be what Applicant does in their specification).

12. As per Claim 2, Grochowski teaches: The processor of claim 1, wherein each of said first or second set of micro-ops includes a check micro-op (Paragraph 23).

13. As per Claim 3, Grochowski teaches: The processor of claim 2, wherein said check micro-op is to check for a calculated value of said predicate of true when said predicted predicate value is true (Paragraph 23).

14. As per Claim 4, Grochowski teaches: The processor of claim 3, wherein said check micro-op is to initiate a recovery when said calculated value is false (Paragraphs 28 and 29).

15. As per Claim 5, Grochowski teaches: The processor of claim 3, wherein said first set of micro-ops includes a first micro-op corresponding to said first instruction without predicate (Paragraphs 21-23).

16. As per Claim 6, Grochowski teaches: The processor of claim 2, wherein said check micro-op is to check for a calculated value of said predicate of false when said predicted predicate value is false (Paragraph 23).

17. As per Claim 7, Grochowski teaches: The processor of claim 6, wherein said check micro-op is to initiate a recovery when said calculated value is true (Paragraphs 28 and 29).

18. As per Claim 8, Grochowski teaches: The processor of claim 1, wherein said sequence of micro-ops includes a micro-op corresponding to said first instruction without predicate (Paragraphs 25-26).

19. As per Claim 9, Grochowski teaches: The processor of claim 8, wherein said sequence of micro-ops includes a conditional move micro-op (Paragraphs 25-26).

20. As per Claim 10, Grochowski teaches: A method, comprising:

determining a predicted predicate value for a first instruction with a predicate (Paragraph 20);

determining a confidence value for said predicted predicate value (Paragraph 20); and

issuing micro-ops corresponding to said first instruction responsive to said confidence value, wherein one or more micro-ops from a first or second set of

unconditional micro-ops, wherein the first and second set of unconditional micro-ops correspond to conditional branches of said first instruction (See Figure 1, "if" instructions are conditional branches), are conditionally issued based on the predicted predicate value of said first instruction when said confidence value is high and a sequence of micro-ops that implement the predicate of the first instruction without stalling the instruction when said confidence value is low (Paragraph 21, if the confidence value is high, it executes a series of microinstructions. As stated in the 112 rejections, since an instruction cannot proceed without knowing its predicate, this would appear to not be possible. However, Examiner notes that both the claim and Grochowski's stalling are functionally equivalent to each other, as in both cases, the instruction cannot proceed without the predicate being resolved, with Grochowski requiring instructions to complete to get the predicate before it can continue, which appears to be what Applicant does in their specification).

21. As per Claim 27, Grochowski teaches: An apparatus, comprising:

means for determining a predicted predicate value for a first instruction with a predicate (Paragraph 20);

means for determining a confidence value for said predicted predicate value (Paragraph 20); and

means for issuing micro-ops corresponding to said first instruction responsive to said confidence value, wherein one or more micro-ops from a first or second set of unconditional micro-ops, wherein the first and second set of unconditional micro-ops

correspond to conditional branches of said first instruction (Figure 1, the if instruction is a conditional branch), are conditionally issued based on the predicted predicate value of said first instruction when said confidence value is high and a sequence of micro-ops that implement the predicate of the first instruction without stalling the instruction when said confidence value is low (Paragraph 21, if the confidence value is high, it executes a series of microinstructions. As stated in the 112 rejections, since an instruction cannot proceed without knowing its predicate, this would appear to not be possible. However, Examiner notes that both the claim and Grochowski's stalling are functionally equivalent to each other, as in both cases, the instruction cannot proceed without the predicate being resolved, with Grochowski requiring instructions to complete to get the predicate before it can continue, which appears to be what Applicant does in their specification).

22. As per Claims 11 and 28, with Claim 11 being exemplary, Grochowski teaches: The method of claim 10, wherein each of said first or second set of unconditional micro-ops includes a check micro-op when said confidence value is high (Paragraph 23). Claim 28 teaches similar limitations and is rejected for the same reasons.

23. As per Claims 12 and 29, with Claim 12 being exemplary, Grochowski teaches: The method of claim 11, wherein said check micro-op checks for a calculated value of said predicate of true when said predicted predicate value is true (Paragraph 23). Claim 29 teaches similar limitations and is rejected for the same reasons.

24. As per Claims 13 and 30, with Claim 13 being exemplary, Grochowski teaches: The method of claim 12, further comprising initiating a recovery when said calculated value of said predicate is false (Paragraphs 28-29). Claim 30 teaches similar limitations and is rejected for the same reasons.

25. As per Claims 14 and 31, with Claim 14 being exemplary, Grochowski teaches: The method of claim 12, further comprising issuing a first micro-op corresponding to said instruction without predicate (Paragraphs 21-23). Claim 31 teaches similar limitations and is rejected for the same reasons.

26. As per Claims 15 and 32, with Claim 15 being exemplary, Grochowski teaches: The method of claim 11, wherein said check micro-op checks for a calculated value of said predicate of true when said predicted predicate value is false (Paragraph 23). Claim 32 teaches similar limitations and is rejected for the same reasons.

27. As per Claims 16 and 33, with Claim 16 being exemplary, Grochowski teaches: The method of claim 15, further comprising initiating a recovery when said calculated value of said predicate is true (Paragraphs 21-23). Claim 33 teaches similar limitations and is rejected for the same reasons.

28. As per Claims 17 and 34, with Claim 17 being exemplary, Grochowski teaches: The method of claim 10, wherein said sequence of micro-ops includes a conditional

move micro-op when said confidence value is low (Paragraphs 25-26). Claim 34 teaches similar limitations and is rejected for the same reasons.

Claim Rejections - 35 USC § 103

29. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

30. Claims 18-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grochowski, in view of Foldoc.

31. As per Claim 18, Grochowski teaches: A system, comprising:

a processor including a predicate predictor to determine a predicted predicate value and a confidence value for said predicated predicate value for a first instruction with a predicate (Paragraph 20), and

a micro-op generator to conditionally issue one or more micro-ops from a first or second set of unconditional micro-ops based on the predicted predicate value of said first instruction when said confidence value is high and a sequence of micro-ops that implement the predicate of the first instruction without stalling the instructions when said confidence value is low, wherein the first and second set of unconditional micro-ops correspond to conditional branches of said first instruction (Paragraph 21, if the confidence value is high, it executes a series of microinstructions. As stated in the 112

rejections, since an instruction cannot proceed without knowing its predicate, this would appear to not be possible. However, Examiner notes that both the claim and Grochowski's stalling are functionally equivalent to each other, as in both cases, the instruction cannot proceed without the predicate being resolved, with Grochowski requiring instructions to complete to get the predicate before it can continue, which appears to be what Applicant does in their specification. Figure 1 discloses the conditional branch aspect), but fails to explicitly teach:

an interface to couple said processor to input-output devices; and

an audio input-output coupled to said interface and said processor.

Grochowski teaches a processor used in a computer system, but does not explicitly disclose a coupled input-output device, or specifically, an audio input-output device. However, Foldoc teaches that most computers have four types of hardware components, among them, input-output devices (IO). Foldoc further teaches that input-output devices are used to communicate with the user and the outside world using peripherals. Furthermore, Foldoc discloses that speakers and microphone are common examples of a peripheral, both of which are audio devices. Given the ability to interact with the outside world, and the advantage of being able for the user to interact with the computer via audio, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use an input-output device provided by the computer to interface with an audio device.

32. As per Claim 19, Grochowski teaches: The system of claim 18, wherein each of said first or second set of unconditional micro-ops includes a check micro-op (Paragraph 23).

33. As per Claim 20, Grochowski teaches: The system of claim 19, wherein said check micro-op is to check for a calculated value of said predicate of true when said predicted predicate value is true (Paragraph 23).

34. As per Claim 21, Grochowski teaches: The system of claim 20, wherein said check micro-op is to initiate a recovery when said calculated value is false (Paragraphs 21-23).

35. As per Claim 22, Grochowski teaches: The system of claim 21, wherein said first set of micro-ops includes a first micro-op corresponding to said first instruction without predicate (Paragraphs 21-23).

36. As per Claim 23, Grochowski teaches: The system of claim 19, wherein said check micro-op is to check for a calculated value of said predicate of false when said predicted predicate value is false (Paragraph 23).

37. As per Claim 24, Grochowski teaches: The system of claim 23, wherein said check micro-op is to initiate a recovery when said calculated value is true (Paragraphs

21-23).

38. As per Claim 25, Grochowski teaches: The system of claim 18, wherein said sequence of micro-ops includes a micro-op corresponding to said first instruction without predicate (Paragraphs 21-23).

39. As per Claim 26, Grochowski teaches: The system of claim 25, wherein said sequence of micro-ops includes a conditional move micro-op (Paragraphs 25-26).

Claim Rejections - 35 USC § 103 (New Grounds)

40. The Examiner has provided a new grounds of rejection for the claims below, resulting from an alternate interpretation to the claim language. While it has been established that a predicated instruction cannot proceed through the pipeline without its predicate being known or predicted, and that if it is not available, it clearly must stall, Examiner has interpreted that this claim limitation could possibly indicate that the instruction predicts a predicate even with a low confidence value, and that the instructions which "implement the predicate" can be the instructions which verify if the prediction was correct. While such an implementation would make confidence values moot, for the sake of completeness Examiner will address this limitation.

41. Claims 1-17 and 27-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grochowski, in view of Grochowski.

42. As per Claim 1, Grochowski teaches: A processor, comprising:

a predicate predictor to determine a predicted predicate value and a confidence value for the predicted predicate value for a first instruction with a predicate (Paragraph 20); and

a micro-op generator to conditionally issue one or more micro-ops from a first or second set of unconditional micro-ops based on the predicted predicate value of said first instruction when said confidence value is high (Paragraph 21, if the confidence value is high, it executes a series of microinstructions), wherein the first and second set of unconditional micro-ops correspond to conditional branches of said first instruction (See Figure 1, "if" instructions are conditional branches), but fails to teach:

and a sequence of micro-ops that implement the predicate of the first instruction without stalling the instruction when said confidence value is low.

While Grochowski teaches that the instruction must stall until the predicate is known (as there must be some predicate used to advance the instruction), Grochowski teaches that the reason that the stall is implemented is because that the recovery time for an incorrect choice requires more clock cycles to resolve than if the instruction simply waits for the value (Paragraph 26). However, this suggests that if the opposite were true, such that it takes the pipeline more clock cycles to resolve the predicate than it would take to recover the pipeline state (or the same amount of time), then it would clearly be best to simply guess the predicate anyways, using whatever value is available. In this situation, it would have been obvious to one of ordinary skill in the art

to simply guess the predicate, and send it forward without stalling, with the advantage that even if the prediction is incorrect, the system could be restored in less (or the same) amount of time than it would take to wait for the value, thus there is no performance reason to wait for the value.

43. The remainder of the claims rejected under these grounds are substantially similar to the rejections laid out in the 102 rejections above (with the difference of the limitation discussed in Claim 1, making it a 103), and are rejected for the same reasons as laid out above.

44. Claims 18-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grochowski, further in view of Foldoc.

45. As per Claim 18, Grochowski teaches: A system, comprising:

a processor including a predicate predictor to determine a predicted predicate value and a confidence value for said predicated predicate value for a first instruction with a predicate (Paragraph 20), and

a micro-op generator to conditionally issue one or more micro-ops from a first or second set of unconditional micro-ops based on the predicted predicate value of said first instruction when said confidence value is high (Paragraph 21, if the confidence value is high, it executes a series of microinstructions) and wherein the first and second

set of unconditional micro-ops correspond to conditional branches of said first instruction(Figure 1), but fails to explicitly teach:

a sequence of micro-ops that implement the predicate of the first instruction without stalling the instructions when said confidence value is low;

an interface to couple said processor to input-output devices; and

an audio input-output coupled to said interface and said processor.

Grochowski teaches a processor used in a computer system, but does not explicitly disclose a coupled input-output device, or specifically, an audio input-output device. However, Foldoc teaches that most computers have four types of hardware components, among them, input-output devices (IO). Foldoc further teaches that input-output devices are used to communicate with the user and the outside world using peripherals. Furthermore, Foldoc discloses that speakers and microphone are common examples of a peripheral, both of which are audio devices. Given the ability to interact with the outside world, and the advantage of being able for the user to interact with the computer via audio, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use an input-output device provided by the computer to interface with an audio device.

While Grochowski teaches that the instruction must stall until the predicate is known (as there must be some predicate used to advance the instruction), Grochowski teaches that the reason that the stall is implemented is because that the recovery time for an incorrect choice requires more clock cycles to resolve than if the instruction simply waits for the value (Paragraph 26). However, this suggests that if the opposite

were true, such that it takes the pipeline more clock cycles to resolve the predicate than it would take to recover the pipeline state (or the same amount of time), then it would clearly be best to simply guess the predicate anyways, using whatever value is available. In this situation, it would have been obvious to one of ordinary skill in the art to simply guess the predicate, and send it forward without stalling, with the advantage that even if the prediction is incorrect, the system could be restored in less (or the same) amount of time than it would take to wait for the value, thus there is no performance reason to wait for the value.

46. The remainder of the claims rejected under these grounds are substantially similar to the rejections laid out in the other 103 rejections above (with the difference of the limitation discussed in Claim 18), and are rejected for the same reasons as laid out above.

Response to Arguments

47. Applicant's arguments filed 5/7/2007 have been fully considered but they are not persuasive.

Regarding Applicant's first argument, starting on Page 9 of the response, Applicant has argued that Grochowski does not teach conditionally issuing one or more micro-ops from a first or second set of unconditional micro-ops based on the predicted value of said first instruction when said confidence value is high. Applicant has argued that because Grochowski uses the predicted predicate to decide what to do with this

instruction, that this somehow is different from issuing "unconditional" micro-ops based on the predicted value. First of all, Examiner does not see how what Grochowski does is different than the claimed invention, in fact, referring to Applicant's paragraph 17 of the specification, they appear to do the exact same thing. Grochowski uses the predicted predicate value to decide if micro-ops corresponding to the "true" or "false" paths need to be issued, which is exactly what Applicant is doing. These operations are unconditional, for example, see Figure 1, where based on the predicate in the IF statement, either an unconditional move, or an unconditional add is issued. If Applicant feels that this is somehow different than what is being claimed, then Examiner does not feel that Applicant has support in their specification for these limitations, and furthermore, Examiner would question why predicates or even confidence values are in use if they aren't used, as Applicant seems to be suggesting.

Regarding Applicant's second argument, Examiner concedes that Grochowski does explicitly state that the pipeline is stalled while the instruction waits for the predicate value to be resolved so it can move forward, however, as discussed above in both the 112 rejections and the art rejections, Examiner does not believe it is possible for an instruction without a predicate value to be executed, thus all predicated instructions are required to stall until they have a value they can make use of, correct or otherwise, it is similar to an instruction not being able to execute without its operands, it is just not possible. Therefore, Examiner has attempted to interpret the claim in a way that is possible to occur, and in a manner that Examiner believes is the closest to what Applicant is attempting to claim, based on the specification, where there appears to be

either functional equivalence to Grochowski, exact equivalence to Grochowski, or a random guess of a predicate to advance the instruction while the actual value is being calculated, and for the latter case, Examiner has provided a new 103 rejection to deal with that interpretation.

As indicated earlier in the Action, Examiner feels that a clarification of the language in the independent claims to indicate that the instruction is replaced or decomposed into other instructions, and removing the "without stalling" language which is not supported in the specification, would overcome these issues, and possibly overcome the references used in the art rejections. Again, Applicant is encouraged to contact Examiner to discuss any possible wording that would help overcome these rejections, if that is the path Applicant wishes to take to help move the case towards allowance.

Conclusion

48. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert E. Fennema whose telephone number is (571) 272-2748. The examiner can normally be reached on Monday-Friday, 8:45-6:15.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Chan can be reached on (571) 272-4162. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Robert E Fennema
Examiner
Art Unit 2183

RF

EDDIE CHAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100